

REMARKS/ARGUMENTS

Upon entry of this amendment, which amends claims 1-3, 11-13, and 19 and adds claims 20-27, claims 1-3, 5-13, and 15-19 remain pending, and claims 20-27 are newly presented for examination. Support for all amended and new claims can be found in the specification, and no new matter has been added.

In the Office Action to which this paper is responsive, claims 1-3, 5-13 and 15-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Doerre et al., U.S. Patent No. 6,446,061, in view of Powers et al., U.S. Patent No. 6,513,027. Reconsideration in view of the foregoing amendments and following remarks is respectfully requested.

Rejection of Claims 1-3, 5-13 and 15-19 under 35 U.S.C. §103(a)

Claims 1-3, 5-13 and 15-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Doerre et al., U.S. Patent No. 6,446,061, in view of Powers et al., U.S. Patent No. 6,513,027. Without conceding the merits of the rejection as applied to the previously presented claims, Applicants respectfully submit that the amended claims overcome this rejection.

Claim 1, as amended, is directed to a method for clustering information-including items. The items are input into a clustering process. Also input into the clustering process is an "initial organization structure including one or more categories, a first one of the items being associated with at least one of the categories of the initial organization structure." The items are processed "in at least the clustering process, the clustering process being based in part upon the initial organization structure and in part upon the information in each of the items." Based on the processing, a resulting organization structure is automatically determined. The resulting organization structure comprises "at least a portion of the initial organization structure and a modification to at least one of the categories of the initial organization structure such that an association of the first one of the items to at least one of the categories of the resulting organization structure is different from an association of the first one of the items to at least one of the categories of the initial organization structure."

Neither Doerre nor Powers nor any combination thereof teaches or suggests such a method. For instance, Doerre fails to teach a step of inputting an initial organization structure into a clustering process or a step of a guided clustering process based in part on the initial organization structure, as recited in claim 1.

During the course of prosecution to date, two passages in Doerre have been cited as teaching the step of inputting an initial organization structure; however, neither passage actually does. The first cited passage (Doerre, col. 12, lines 35-46), reads:

An example of clustering in Text Mining would be to analyze e-mail from customers to find out if there are some common themes that have been overlooked. The effect of clustering is to segment a document collection into subsets (the clusters) within which the documents are similar in that they tend to have some common features. Clustering can be used to

Provide an overview of the contents of a large document collection

Identify hidden similarities

Ease the process of browsing to find similar or related information.

This passage appears in the context of a general description of clustering, which Doerre defines as "a fully automatic process which divides a collection of documents into groups. The documents in each group are similar to each other in some way." (Doerre, col. 12, lines 17-19.)

While this definition is consistent with a "clustering process" as that term is generally understood in the art, Doerre does not teach that a clustering process could take as an input an initial organization structure. To the contrary, Doerre expressly states that "[f]or clustering, ***no predefined taxonomy or classification schemes are necessary***" (Doerre, col. 12, lines 33-34. emphasis added). That is, clustering is performed without reference to any initial organization structure, and Doerre fails even to suggest that such structure could be input into a clustering process.

The second cited passage (Doerre, col. 14, lines 26-56), begins:

In general, to categorize objects means to assign them to predefined categories or classes from a taxonomy. The categories may be overlapping or subsuming. For text mining, categorization

means to assign categories to documents or to organize documents with respect to a predefined organization. These could for example be the folders on a desktop, which are usually organized by topics or themes. *Categorization in the context of text mining means to assign documents to preexisting categories, sometimes called topics or themes.* The categories are chosen to match the intended use of the collection and have to be trained beforehand. (Emphasis added.)

The remainder of the passage describes applications of categorization.

This second passage is not describing "clustering," which could be used to define categories of similar documents, but rather to a different process, which Doerre calls "categorizing" and defines as "to assign [objects] to *predefined* categories or classes from a taxonomy" (Doerre, col. 14, lines 26-27, emphasis added). Categorization is thus different from clustering in that categorization merely assigns objects to existing categories and does not involve creating any new categories or modifying category definitions. Thus, while it could be argued that Doerre teaches that an organizational structure is an input to a *categorization* process, the categorization process does not create a "resulting organization structure comprising at least a portion of the initial organization structure *and a modification* to at least one of the categories of the initial organization structure," as recited in claim 1. Applicants have not found any disclosure in Doerre that teaches or fairly suggests a clustering process that takes any organization structure as an input.

Given that Doerre fails to teach or suggest that an initial organization structure could be an input to a clustering process, it follows that Doerre also fails even to suggest processing the plurality of items in a clustering process that is "based in part upon the initial organization structure and in part upon the information in each of the items," as further recited in claim 1.

Powers teaches a process that "automatically generates subcategories from categories of a knowledge base." (Powers, Abstract). In this process, some of the existing hierarchical categories in a knowledge base are selected as "dimensional categories"; these categories are on a "horizontal line" through the knowledge base (Powers, col. 4, lines 2-8).

Powers discloses that the dimensional categories can be used in a category splitting process that splits a target category into subcategories (Powers, col. 5, lines 53-55; see also Fig. 2).

The category splitting process taught by Powers, however, is different from the guided clustering of claim 1. Category splitting merely adds subcategories to a category of an existing hierarchical structure; Powers does not teach or suggest any other type of modification. In contrast, guided clustering in embodiments of the present invention, can modify the existing structure, e.g., by changing category definitions, adding new categories at the same level of a hierarchy as existing categories, interposing a new category between existing levels of a hierarchy, and so on.

Claim 1, as amended, recites that the resulting organization structure includes "a modification to at least one of the categories of the initial organization structure such that an association of the first one of the items to at least one of the categories of the resulting organization structure is different from an association of the first one of the items to at least one of the categories of the initial organization structure." Powers does not teach or suggest a process in which any of the original categories are modified, merely that new subcategories can be added within an existing category. Since Doerre provides no teaching at all related to using an initial organization structure in a clustering process, the combination of Doerre and Powers fails to teach or suggest modification of a category in an initial category structure as a result of a clustering process as recited in claim 1.

For at least these reasons, claim 1 is patentable over Doerre and Powers. Claims 2, 3 and 5-10, which depend from claim 1, derive patentability therefrom.

Independent claim 11 has been amended similarly to independent claim 1 and is also patentable over Doerre and Powers for at least the same reasons as claim 1. Claims 12, 13 and 15-18, which depend from claim 11, derive patentability therefrom.

Independent claim 19 has been amended to recite that the first hierarchy includes "at least a parent category and a first child category" and that the second hierarchy resulting from a guided clustering process includes "one or more additional categories coupled to the first hierarchy, at least one of the one or more additional categories being a second child category of the parent category of the first hierarchy." The second child category would be a "sibling" of the

first child category, not a subcategory of the first child category. Thus, the second hierarchy recited in claim 19 is very different from category splitting as taught by Powers and is not suggested by Powers or Doerre or any combination thereof. For at least these reasons, claim 19 is patentable over Doerre and Powers.

In view of the foregoing, withdrawal of the rejection of claims 1-3, 5-13, and 15-19 under 35 U.S.C. §103(a) is respectfully requested.

New Claims

Claims 20-27 have been added by this amendment. Applicant respectfully submits that support for these claims may be found throughout the specification and drawings. For instance, a description of one clustering process that is "biased toward the categories of the initial organization structure" (claim 20) can be found, e.g., at ¶¶[65]-[100] (page 17, line 15-page 21, line 2), and modification of a category (claims 21 and 22) is a consequence of modification of the clusters using this process. A resulting organization structure that includes at least one additional category (claim 23) is described, e.g., at ¶[54] (page 15, lines 11-12) and shown in Fig. 6. A guided clustering process that "guarantees that the resulting organization structure is an extension of the initial organization structure" (claim 24) is described, e.g., at ¶¶[101]-[140] (page 21, line 4-page 25, line 4). Rejecting a cluster that is inconsistent with the initial organization structure (claim 25) is described, e.g., at ¶¶[104]-[106] (page 21, line 21-page 22, line 9). Interposing a new category between a parent category and a child category (claim 26) is described, e.g., at ¶[102] (page 21, liens 11-13). A guided clustering process with an input that is not associated with any of the initial categories but is associated with at least one of the resulting categories (claim 27) is disclosed, e.g., at ¶¶[53]-[54] (page 14, line 30-page 15, line 12) and shown in Fig. 5. It is to be understood that these citations are not an exhaustive list.

In order to expedite prosecution, Applicants respectfully submit the following grounds for patentability of new claims 20-27 over Doerre and Powers.

Claims 20-26 are dependent claims: claims 20-23 depend from claim 1, and claims 24-26 depend from claim 19. These claims are therefore patentable for at least the reasons stated above.

New independent claim 27 recites a method for clustering items using a guided clustering process. The items and an initial organizational structure are input into the guided clustering process; the initial organization structure is such that "at least a first one of the items is not associated with any of the categories of the initial organization structure." The resulting organization structure includes "at least a portion of the initial organization structure and a modification to the initial organization structure such that the first one of the items is associated with at least one of the categories in the resulting organization structure."

As discussed above, neither Doerre nor Powers nor any combination thereof teaches or suggests a guided clustering process that includes modifying at least one of the models corresponding to the categories of an initial organization structure. Further, neither Doerre nor Powers provides any teaching or suggestion related to an item that cannot be associated with any of the initial categories. Doerre teaches categorization, which at most suggests that it is possible to determine that an item is not associated with any category, but Doerre provides no teaching as to further handling of such an item. Powers teaches generating subcategories, but all of the documents to be subcategorized are already associated with one of the initial categories. Powers provides no teaching related to documents that are not associated with any category.

For at least these reasons, new claim 27 is patentable over Doerre and Powers.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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